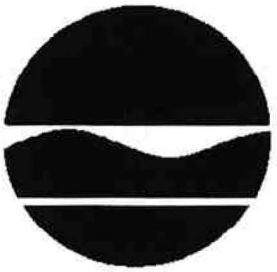
SUPERFUND STANDBY PROGRAM
New York State
Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

SITE ID 260: USAIR GROUP, INC.
HANCOCK INTERNATIONAL AIRPORT, SYRACUSE

SITE SUMMARY REPORT
REVISION 1



Onondaga Lake Project
Task 5: 104(e) Review

Site No. 734030-002
Work Assignment Number D003060-9

Prepared by

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1.0 SITE DESCRIPTION

In general, the information referenced in this report was obtained from the 104(e) responses of USAir Group, Inc. (Company ID 2024). Two mailings were received from USAir dated June 1, 1995 and March 6, 1996, and were reviewed by TAMS (see Completeness Reviews A and B, October 6, 1995 and October 25, 1996, respectively). Also, a June 24, 1996 letter from NYSDEC to C & S Engineering, a consultant for USAir, summarized a telephone conversation between the two parties.

1.1 Location

The USAir fuel farm facility is located at Clarence E. Hancock International Airport in North Syracuse, Onondaga County, New York. The facility is southeast of Airport Boulevard and the Penn-Can Highway (also Route 81), and north of Hinsdale Avenue. USAir also uses gates at the Hancock Airport Terminal which is east of the fuel farm. Figure 1 shows the USAir fuel farm in relation to Onondaga Lake. USAir site locations at Hancock Airport are shown in Figure 2.

1.2 Geology

The surficial geology of the Syracuse area was strongly influenced by the most recent glacial advance (Wisconsin age, 12,000 to 14,500 years ago). Syracuse occupies a region that was covered by Lake Iroquois, a large glacial lake situated in front of the ice margin. The broad flat-lying plains situated from Syracuse north to Lake Ontario were formed beneath Lake Iroquois and are characterized by lacustrine fine sand and silt deposits. Additional glacial features which are common to the region are moraines, drumlins, U-shaped valleys and meltwater channels. The last of these features is important in understanding the geology of

the area. Onondaga Lake and all its major tributaries lie within glacial meltwater channels. These features originally formed as a conduit to carry meltwater away from the glacier. They typically transmitted large volumes of water at high velocities. Sediment types characteristically found in meltwater channels are sands and gravels. In the Syracuse region, these relict features form important water bearing and transmitting units which lie in an irregularly branching, net-like pattern throughout the area.

The bedrock geology of the greater Syracuse area includes Lower to Middle Paleozoic age sedimentary rocks predominated by carbonate (dolostone and limestone) and shale and containing some sandstone, siltstone and evaporites. Bedrock directly beneath the site (as well as underneath Onondaga Lake) is the Silurian Vernon Shale (Rickard and Fischer, 1970) which has low permeability, but does possess secondary porosity due to fractures.

1.3 Hydrogeology

According to the Syracuse West USGS quadrangle, ground surface elevations at Hancock International Airport range from approximately 410 to 420 feet NGVD. The USAir fuel farm facility, as well as USAir gates at the Hancock Terminal are at an elevation of approximately 420 feet NGVD. By design, fuel storage tanks at the USAir fuel farm are located inside an earth diked containment area, which is lined with six inches of natural clay soil, and is covered with 3 inches of crushed stone gravel (p. 000052). Naturally occurring soils beneath the fuel farm were not described. Groundwater elevations were not provided, nor was the direction of groundwater flow from the site.

1.4 Surface Water Hydrology

The USAir fuel farm is approximately 1,500 feet southeast of Beartrap Creek and 6,500 feet north of Ley Creek. Stormwater from the entire airport drains into storm sewers located on the Hancock International Airport property, and discharges from seven permitted stormwater outfalls to Ley Creek North Branch and Beartrap Creek. The southeastern corner of Hancock Airport is approximately 1,000 feet west of Ley Creek North Branch. Stormwater from USAir's current fuel farm (see Figure 2) discharges into Beartrap Creek, following treatment by an oil/water separator, under USAir's New York State Pollutant Discharge Elimination System (SPDES) permit (p. 000122). USAir's existing oil/water separator at their current fuel farm has been in use since 1989. It is not known whether the fuel farm operated by USAir's predecessors (see Section 2.1) prior to 1989 included an oil/water separator.

2.0 SITE HISTORY

2.1 Owners/Operators

USAir has operated at three airports within a fifty-mile radius of the shoreline of Onondaga Lake, including Hancock International Airport in North Syracuse (Site ID 260), Tompkins County Airport in Ithaca (Site ID 261), and Oneida County Airport near Rome, NY (Site ID 262). Of the three airports, Hancock is USAir's only facility within the Onondaga Lake drainage basin. USAir commenced operations (under the name USAir) at Hancock in 1989. Prior to 1989, USAir operated under the names of Mohawk, Allegheny, and Peidmont Airlines, who have been present at the airport since the late 1950s (p. 000009).

2.2 Site Operations

USAir and its contractor, SAIR Aviation, operate and maintain a fuel farm at Hancock Airport, which includes storage tanks for diesel fuel, unleaded gas, jet fuel, waste jet fuel/water mixture, and aircraft deicing fluid. This current fuel farm has been in operation since 1989. USAir, under the name Piedmont Airlines, operated a fuel farm jointly with American Airlines until 1989, at which time USAir closed their portion of the facility. Other USAir operations at Hancock Airport include aircraft line maintenance (fueling, engine servicing, inspecting, deicing) and maintenance of ground service equipment (GSE).

Stormwater runoff from the current USAir fuel farm is collected within a diked area, flows into an oil/water separator (in use since 1989), and discharges into the airport's storm sewer system which outlets to Beartrap Creek (see Figure 3). The discharge is covered under a New York SPDES permit held by USAir (p. 000023). The capacity of the dike (427,000 gallons) is approximately double the design capacity of the largest storage tank. According

to the Spill Prevention Control and Countermeasure (SPCC) Plan prepared by C&S Engineers (June 1994), an 8,000-gallon underground steel tank is used to hold spilled product and stormwater. A submersible pump, rated at a maximum of 50 gallons per minute (gpm), discharges from the tank to the oil/water separator. The separator has a total capacity of 1,000 gallons with a design flow rate of 100 gpm.

USAir and other airlines and delivery service companies conduct aircraft deicing at Hancock Airport during wet-weather periods when temperatures are generally below 40°F. Deicing fluid consists of mixtures of either ethylene glycol and water or propylene glycol and water (USAir currently uses propylene glycol mixture at Hancock). USAir utilizes approximately 25 to 30% of the total amount of deicing fluid used at Hancock Airport (p. 000023).

2.3 Generation and Disposal of Wastes

Approximate volumes of each waste type currently generated from USAir operations are shown in Table 1. USAir activities at Hancock Airport have been consistent since 1989, and therefore historic waste generation during their period of operation are inferred to be similar to current waste generation identified in Table 1. Disposal and transport methods for hazardous materials and industrial wastes generated since 1990 are listed in Table 2. USAir stated that waste materials from Hancock were disposed in a similar manner prior to 1990 (p. 000016). Many of the wastes listed in Table 2 resulted from a one-time airport cleanup which was completed by USAir near its terminal facilities in 1994. The cleanup was prompted by the discovery of a number of drums of unknown material and origin. The unknown materials were not generated by USAir. According to a phone conversation between NYSDEC and C & S Engineers, USAir discovered these drums of unknown origin and took the responsibility for characterizing the contents and disposing the drums (NYSDEC, 1996).

According to USAir, only "general refuse" from Hancock Airport was disposed within the Onondaga Lake drainage basin. Hazardous wastes generated by USAir at the Oneida County Airport were transported to a treatment, storage, and disposal facility in Syracuse operated by Solvents & Petroleum Service, Inc. Wastes generated from USAir's operations at Oneida County Airport and hauled/disposed by Solvents & Petroleum Service include waste flammable liquid containing toluene (55 gallons, 1986 - 1992), waste oil (110 gallons, 1992), hazardous waste liquid (55 gallons, 1987), and 55 gallons each of waste trichloro-fluoroethane, waste petroleum naptha, and waste trichloroethane in 1986 (p. 000021). Select invoices and hazardous waste manifests for shipments from the Hancock International Airport (1990 to 1994) and Oneida County Airport (1986 to 1992) were provided.

USAir generates wastewater from a wash area used for cleaning of ground service equipment. The wastewater flows through a 400-gallon oil/water separator and is then discharged to the Onondaga County sanitary sewer system. USAir provided a copy of a March 5, 1996 letter from the Onondaga County Department of Drainage and Sanitation (OCDDS), which states that an Industrial Wastewater Discharge Permit is not required for the ground service equipment maintenance facility, provided that the oil/water separator currently in use is properly maintained to prevent discharges of oil to the sewer system (p. 000292).

Table 1: Waste Materials Generated by USAir Operations at Hancock Airport

Type of Waste	Approximate Quantity
Fuel Farm	
Reclaimable in-line fuel filters	24 filters per year
Absorbent material	1 drum per year (average)
Waste oil from oil/water separator	As needed
Aircraft Line Maintenance	
General (non-hazardous) refuse	14,250 pounds/2 week period
Unused or out-of-date products	Varies
Ground Service Equipment Maintenance	
Waste oil (non-hazardous)	650 gallons/year

Note: Waste quantities represent typical current (June 1995, Mailing No. 1) generation. Quantities are also typical of waste generation during their period of operation (since 1989), not including the one-time airport cleanup (1994).

Source: USAir, pp. 000012 & 000013

Table 2: Waste Disposal Methods for USAir since 1990

Waste Generated	Transportation/ Disposal Method	Transporter/ Disposal Facility	Date Waste Was Hauled	Quantity Hauled
Reclaimable in-line fuel filters	Transported back to the manufacturer	Velcon Filters, Inc., CO	Annually	24 filters
General refuse	Compacted and removed to Onondaga County Solid Waste transfer station.	Ace Sanitary Haulers, Inc., Syracuse, NY	Bi-weekly	14,250 pounds per 2 weeks (average)
Waste oil (non-hazardous)	Transported to off-site facility for recycling	Bison Waste Oil Company, Cowlesville, NY	1994	650 gallons
Speedy Dry and kerosene. Absorbent material from cleanup of aircraft fuel spill.	Transported off-site for sludge incineration	Clean Harbors Environmental Services, MA	October 1994	300 pounds
Fuel for Aviation Engine contaminated with water when delivered to fuel farm	Transported off-site for liquid incineration	Clean Harbors Environmental Services, MA	July 1994	165 gallons
Waste paint related material, removed from spill in aircraft bag compartment	Transported off-site for solid incineration	Clean Harbors Environmental Services, MA	June 1994	20 pounds
Debris with gasoline, benzene (one- time cleanup); 5 drums of unknown origin	Transported off-site for sludge incineration	Clean Harbors Environmental Services, MA	May 1994	2,250 pounds
Kerosene and motor oil collected at USAir Fuel Farm used for fuel servicing	Transported off-site for liquid incineration	Clean Harbors Environmental Services, MA	May 1994	385 gallons
Kerosene trichloroethylene (one-time cleanup), 3 drums flammable liquid hazardous waste of unknown origin	Transported off-site for liquid incineration	Clean Harbors Environmental Services, MA	May 1994	165 gallons
Waste petroleum oil (non-hazardous), 3 drums flammable liquid hazardous waste of unknown origin	Transported off-site for liquid incineration	Clean Harbors Environmental Services, MA	May 1994	165 gallons
Hazardous waste liquid, containing chromium; 1 drum liquid hazardous waste bathroom deodorizer	Transported off-site for liquid incineration	Clean Harbors Environmental Services, MA	May 1994	55 gallons

Table 2: Waste Disposal Methods for USAir since 1990 (continued)

Waste Generated	Transportation/ Disposal Method	Transporter/ Disposal Facility	Date Waste Was Hauled	Quantity Hauled
Cleaning compound (non-hazardous) (one-time cleanup)	Transported off-site for liquid incineration	Clean Harbors Environmental Services, MA	May 1994	220 gallons
Waste Androx 423Y, contains formaldehyde (non-hazardous)	Transported off-site for liquid incineration	Clean Harbors Environmental Services, MA	May 1994	275 gallons
Floor cleaner (non-hazardous), 1 drum of unknown origin	Transported off-site for liquid incineration	Clean Harbors Environmental Services, MA	May 1994	55 gallons
Empty drums (14 empty - 55-gallon drums) part of one-time airport cleanup	Transported off-site	Clean Harbors Environmental Services, MA	May 1994	700 pounds
Waste gasoline, generated from fuel spill on a ramp	Transported off-site for liquid incineration	Clean Harbors Environmental Services, MA	March 1994	1,750 pounds
Hydraulic oil drained from aircraft (servicing requirement	Transported off-site for liquid incineration	Clean Harbors Environmental Services, MA	March 1994	605 gallons
Kerosene and motor oil containing mineral spirits from oil/water separator	Transported to off-site facility for liquid incineration	Clean Harbors Environmental Services, MA	Sept. 1993	400 gallons
Jet fuel/engine oil	Transported off-site for liquid incineration	Clean Harbors Environmental Services, MA	Dec. 1991 Jan. 1991	550 gallons 440 gallons
Unused products (may include paint and cleaning compounds)	Disposed in Braintree, Massachusetts	Clean Harbors Environmental Services, MA	May 1992 June 1990	2,200 pounds 340 gallons
Absorbent pads used to absorb petroleum products	Disposed in Braintree, Massachusetts	Clean Harbors Environmental Services, MA	June 1990	495 gallons
Hydraulic oil	Transported off-site for liquid incineration	Clean Harbors Environmental Services, MA	June 1990	110 gallons

Source: USAir, Tables 3 & 4, pp. 000014 - 000020.

3.0 POTENTIAL PATHWAYS FOR RELEASE OF HAZARDOUS SUBSTANCES TO THE LAKE SYSTEM

3.1 Soil

No analytical soil data was provided by USAir. In 1994, three fuel spills reported by USAir occurred on the paved aircraft ramp (see Section 4.1), and were cleaned up immediately according to USAir. It is not likely that soil contamination resulted from these spills. In 1988/1989, during the closure of their portion of the fuel farm jointly held with American Airlines, approximately 2,936 tons of contaminated soil were removed from Hancock Airport and disposed off-site (p. 000243). Thus, there is historic potential for transport of contaminants in surface soil on and near the site to nearby surface water or the sewer system by erosion due to surface water runoff and dusting during dry, windy conditions. Subsurface soil contamination can be transported to the lake system via dissolution and subsequent groundwater migration to the lake or its tributaries (Beartrap Creek, Ley Creek North Branch).

3.2 Surface Water

As heated deicing fluid is sprayed on the surface of an aircraft, approximately 16% adheres to the airplane, 49% spills onto the apron, and 35% becomes overspray and is dispersed by the wind (Roy F. Weston, p. 4-1). Based on these figures, it is likely that glycol fluids used by USAir to deice aircraft have spilled onto the ramp pavement, and have subsequently drained into airport storm sewers. These sewers drain to seven airport outfalls which discharge into Beartrap Creek and Ley Creek North Branch. Stormwater and surface water were not analyzed for glycol compounds, nor were they measured for dissolved oxygen, which can indicate biodegradation of glycol fluids. Stormwater runoff from USAir's current

fuel farm is covered under a New York SPDES permit, and drains into Beartrap Creek. Stormwater analytical data from the fuel farm is summarized in Section 4.1.

3.3 Groundwater

Groundwater at the current fuel farm facility is monitored as required by USAir's Major Petroleum Facility License. Parameters analyzed include petroleum products in water (gasoline, kerosene, fuel oils, and lube oils), and purgeable aromatics (benzene, toluene, ethylbenzene, and xylene (BTEX), chlorobenzene and dichlorobenzene). Groundwater samples were not analyzed for glycol compounds. At all four monitoring wells, in each of the years monitored (1991, 1993, 1994, 1995), pollutants were not detected at concentrations greater than the method detection limits. During the closure of the USAir/American Airlines fuel farm, approximately 1,150 gallons of contaminated "wash water containing oil" were disposed off-site. Approximately 2,936 tons of contaminated soil were also excavated as part of this cleanup (p. 000243), and so it is possible that groundwater from this area was contaminated. No groundwater analytical or elevation data were provided by USAir for the former fuel farm area.

3.4 Air

As mentioned above, approximately 35% of anti-icing fluid (ethylene glycol or propylene glycol) used to deice an aircraft becomes overspray and is dispersed by the wind. Additionally, emissions of carbon monoxide and nitrogen oxides from aircraft exhaust present a potential for air pollution. No information regarding air pollution was provided by USAir. Air pollution represents a local source of contaminants to the atmosphere with potential deposition to the ground surface and subsequent transport to Ley Creek North Branch or Beartrap Creek via surface runoff.

3.5 County Sewer System

Wastewater from the wash area for maintenance of ground service equipment for USAir drains into the Onondaga County sanitary sewer following an oil/water separator. USAir received correspondence from OCDDS (March 5, 1996) stating that an Industrial Wastewater Discharge Permit is not required for this practice as long as the oil/water separator is properly maintained (p. 000292).

4.0 LIKELIHOOD OF RELEASE OF HAZARDOUS SUBSTANCES TO THE LAKE SYSTEM

4.1 Documented Releases

Known releases of substances to the environment consist of petroleum-related materials generated as a result of accidental spills or releases, anti-icing fluid used to deice aircraft, and wastewater from the wash area for ground service equipment which is discharged to the sanitary sewer system. Three known incidences of accidental releases of fuel oil in 1994 were described in USAir's 104(e) response. Possible spills which occurred prior to 1989 during operations of USAir's predecessors were not documented.

In February 1994, a departing crew at Gate 3 left the fuel boost pumps on and a cross feed valve open, pumping fuel from the left wing to the right wing of an aircraft. When the right wing became full, fuel from the left wing vent system leaked onto the ramp. The fueler noticed the leak and notified the Airport Fire Department. Fuel was released for about two minutes, discharging approximately 50 gallons. USAir personnel cleaned the ramp and shoveled fuel-soaked snow into 55-gallon drums. Absorbent material was also used to remove fuel from the ramp. The stormwater outlet for this area, which flows into Ley Creek North Branch, contains a floating boom type dam that is capable of containing a jet fuel spill. Clean Harbors Environmental Services removed and disposed fuel trapped by the boom (p. 000022).

In July 1994, a fueler removed a hose from a single point fueling receptacle. A check valve had remained open and spilled approximately 10 to 15 gallons of fuel onto the ramp. The fueler contacted the Airport Fire Department. Clean Harbors Environmental Services was called to the spill site and placed a floating absorbent boom on the storm drain, and diked the

area that flows into Ley Creek North Branch. Clean Harbors removed fuel from the storm drain system and disposed the absorbent material (p. 000022).

In July 1994, during wing fueling of an aircraft, a spill occurred from the left wing vent area when the auto fuel system did not close in time. The fueler and SAIR Aviation cleaned the spill and no fuel was released to the storm drains or the environment. All fuel and cleanup materials were removed to the SAIR Aviation Area for proper disposal (p. 000022).

Runoff from Hancock Airport during deicing flows into the airport storm sewer system. The stormwater drainage system for the terminal area of the airport flows into Ley Creek North Branch, which is a tributary of Onondaga Lake (p. 000023). No analytical data for the USAir stormwater discharge during deicing activities exists. The City of Syracuse has monitored the seven stormwater outfalls of Hancock International Airport, however the outfalls monitored include contributions of other aviation users at the airport. USAir did not provide a copy of the city's monitoring data. The quantity and type of deicing fluid used by USAir during three winter seasons from 1992 to 1995 and calendar year 1991 are shown in Table 3. According to USAir, previous usage of deicing fluid was not recorded but is believed to be of similar proportions (p. 000023).

Table 3: Aircraft Deicing Fluids used by USAir

Season	Deicing Fluid Type	Quantity (gallons)
1994/1995 Season	Propylene Glycol	28,428
1993/1994 Season	Propylene Glycol	43,266
	Ethylene Glycol	18,712
1992/1993 Season	Ethylene Glycol	40,667
Calendar Year 1991	Ethylene Glycol	30,000 (estimate)

Source: USAir, p. 000023

As heated deicing fluid is sprayed on the surface of an aircraft, approximately 16% adheres to the airplane, 49% spills onto the apron, and 35% becomes overspray and is dispersed by the wind (Roy F. Weston, p. 4-1). Therefore, it is likely that approximately half of the deicing fluid used by USAir spills onto the apron and eventually drains into Beartrap Creek or Ley Creek North Branch, and approximately 35% is released to the air, with potential deposition to surface water or soil.

USAir also discharges wastewater from a wash area located in the USAir ground service equipment maintenance area. The discharge flows through an oil/water separator to the Onondaga County sanitary sewer system. The wash area is used to clean ground service equipment. The flow through the oil/water separator is intermittent. The wash area utilizes Androx 6086 with contains sodium metasilicate. No analytical data is available for this discharge.

Stormwater runoff from the current fuel farm (in service since 1989) flows into an oil/water separator and is then discharged to Beartrap Creek (p. 000023). Under their SPDES permit, USAir is required to monitor the effluent from the oil/water separator prior to discharge to the creek for flow, pH, oil and grease, benzene, toluene, and xylene. USAir is not required to monitor stormwater discharges for glycol compounds. Effluent data are summarized in Table 4. As shown on the table, the 100 µg/L action level for the total concentration of benzene, toluene, and xylene (BTX) was exceeded on eight occasions between July 1991 and July 1994. The oil and grease limitation was exceeded on two occasions, and pH values were found outside the acceptable range on eight occasions. No NYSDEC Notices of Violation of USAir's SPDES permit were included. Actions taken by USAir to correct elevated levels of BTX compounds and oil and grease were not described.

Table 4: Effluent Data from the USAir Fuel Farm Oil/Water Separator

Date	Oil & Grease (mg/L)	pH	Benzene (µg/L)	Toluene (µg/L)	Xylene (µg/L)	Total BTX (µg/L)	Ethylbenzene (µg/L)
Permit Limits	**15**	**6.5 - 8.5**	**--**	**--**	**--**	**100**	**--**
7/18/91	2.8	7.14	--	--	--	156.9	--
9/5/91	--	--	0.82	1.9	1.5	4.22	< 0.5
9/11/91	--	--	1.6	28	190	219.6	11
9/18/91	1.2	6.94	< 5.0	< 5.0	34	34	< 5.0
10/21/91	3.7	6.69	< 2.5	< 2.5	16	16	3.7
11/22/91	< 1.0	6.24	< 5.0	< 5.0	47	47	< 5.0
12/31/91	5.5	6.1	--	--	--	--	--
1/6/92	5.5	6.1	9.7	34	95	138.7	8.4
1/23/92	3.4	6.7	4.5	13	62	79.5	4
2/24/92	3.0	--	< 0.5	< 0.5	< 1.0	<2.0	< 0.5
3/23/92	2.8	7.5	< 0.5	< 0.5	< 1.0	<2.0	< 0.5
9/18/92	4.6	9.10 (field)	< 1.0	< 1.0	< 1.0	<3.0	< 1.0
4/16/93	16	7.69	16	31	140	187	< 0.5
5/5/93	9.9	6.25	20	130	610	760	17
5/6/93	37	6.39	--	--	--	--	--
7/19/93	3.7	6.83	--	--	--	--	--
9/2/93	--	7.14	< 5.0	< 5.0	66	66	< 5.0
9/29/93	11	6.3	13	48	123	184	13
10/20/93		7.11	0.75	16	98	114.75	3.1
11/19/93	5.2	5.57	1.3	10.4	96	107.7	6.8
12/17/93	2.3	7.51	< 0.5	< 0.5	< 1.0	<2.0	< 0.5
4/28/94	5.6	6.67	< 0.5	< 0.5	< 1.0	<2.0	< 0.5
5/24/94	3.1	7.38	< 0.5	< 0.5	< 1.0	<2.0	< 0.5
7/6/94	2.1	7.65	< 0.5	< 0.5	< 1.0	<2.0	< 0.5

Note: Shaded values indicate exceedances

Sources: Data: pp. 000025, 000122 - 000124, 000138

Limits: pp. 000122 - 000124 (SPDES Permit, 1988 - 1993)

4.2 Threat of Release to the Lake System

4.2.1 Extent of Site Contamination

Monitoring wells are shown on the USAir fuel farm site plan (p. 000076) included in the Spill Prevention Control and Countermeasure Plan (C & S Engineers, June 1994, pp. 000036 - 000086). Groundwater monitoring wells are a requirement of USAir's Major Petroleum Facility License. USAir tabulated summaries of the available analytical data for groundwater samples collected in the fuel farm area at monitoring wells MW-1, MW-2, MW-3, and MW-4 (pp. 000247 - 000250). Samples were collected at each well in 1991, 1993, 1994, and 1995. Parameters analyzed include petroleum products in water (gasoline, kerosene, fuel oils, and lube oils), and purgeable aromatics (BTEX compounds, chlorobenzene and dichlorobenzene). No parameter was detected above the analytical method detection limit during this time period. Total petroleum hydrocarbons in the four wells in 1995 were less than 0.1 mg/L. The date of installation of the groundwater monitoring wells was not provided.

In 1994, USAir conducted a "one-time airport cleanup" at Hancock Airport near the terminal area, which consisted of "monitoring and disposal of a number of drums of unknown material" (p. 000013). According to USAir, there was "no release to the environment from these drums" (NYSDEC, 1996). Disposal of these wastes were documented by USAir. No additional information or analytical data were included to assess potential impacts to soil, groundwater, or surface water. USAir stated that the "cleanup was initiated based on USAir discovering drums of material near its terminal facility in the spring of 1994; the generator or origin of the material is unknown" (p. 000244). Waste material profile sheets and hazardous waste manifests were provided for the cleanup. These documents indicate that wastes consisted of gasoline, kerosene, motor oil, petroleum oil, hydraulic oil, jet fuel, and cleaning

products, as well as debris that had been contaminated by the same materials. Drummed wastes were transported and disposed off-site by Clean Harbors Environmental Services in May 1994. USAir did not generate a Work Plan or Final Report for this "one-time cleanup" (NYSDEC, 1996).

USAir closed its portion of their fuel farm jointly held with American Airlines in January 1989, by removing the underground tanks and impacted soil. The location of this facility was not specified by USAir. Maross Construction performed the cleanup and contracted Domermuth Environmental Services to dispose contaminated soils. Approximately 2,936 tons of soil were landfilled off-site and 1,150 gallons of wash water containing oil was disposed as a result of the cleanup (p. 000243). According to NYSDEC, as stated in a February 2, 1989 letter to American Airlines with whom USAir shared the fuel farm, "USAir has removed their underground fuel storage tanks. . . a considerable amount of contaminated soil was also removed. . . there appeared to be no major surprises during their portion of the cleanup" (p. 000253). American Airlines completed closure of their portion of the fuel farm in 1993 and used biological landfarming to remediate contaminated soil (p. 000244). According to NYSDEC (August 5, 1993 letter to Waste Stream Technology, Inc.), it was determined that the remaining soil reached the soil guidance cleanup goals for fuel oil constituents set forth in NYSDEC Spill Technology and Remediation Series (STARS) Memo No. 1 (p. 000254). The remediated soil remained on Hancock Airport property. Analytical data describing concentrations of pollutants in soil or wash water were not included. Also, it is not known whether monitoring wells were installed and groundwater was sampled in the former fuel farm area.

4.2.2 Migration Potential of Contaminants

As mentioned above, it is likely that aircraft deicing fluids (ethylene glycol and propylene glycol) have been released to the air as overspray, or have drained with stormwater or snowmelt into Beartrap Creek and/or Ley Creek North Branch, which are tributaries of Onondaga Lake. Recent (1994) fuel spills onto the paved apron were cleaned up immediately, and therefore are not likely to have contaminated the Onondaga Lake system. Historic spills were not documented. There have been exceedances of USAir's SPDES permit to discharge wastewater from the fuel farm to Beartrap Creek, due to elevated levels of oil and grease, and exceedances of the total BTX action level.

5.0 POTENTIAL FOR ADVERSE IMPACTS TO LAKE SYSTEM DUE TO A RELEASE OR THREAT OF A RELEASE

5.1 Hazardous Substance Characteristics

Parameters of concern for the USAir facility at Hancock Airport were determined to be deicing fluids (ethylene glycol and propylene glycol) and fuel oil, which contains volatile organic compounds (VOCs), particularly benzene, toluene, and xylene. Releases of deicing fluids have been ongoing throughout USAir's presence at Hancock Airport. There are currently no regulations addressing collection of aircraft deicing fluid where potable water supplies are not impacted. Releases from Hancock Airport and USAir are typical of metropolitan airports. Glycolic compounds biodegrade rapidly in aqueous solutions and result in elevated biochemical oxygen demand (BOD) in receiving waters. BOD or dissolved oxygen (DO) data in the creeks were not provided. There were three documented spills of fuel oil on the USAir aircraft ramp in 1994. There have been several exceedances of USAir's SPDES permit effluent limits for BTX compounds. Additionally, the cleanup of USAir's former fuel farm facility resulted in the removal of nearly 3,000 tons of fuel-contaminated soil and almost 1,200 gallons of contaminated wash water.

Mobility

Volatile organic compounds (VOCs), including BTEX compounds, rapidly volatilize into the atmosphere where photooxidation produces hydrochloric acid, carbon monoxide, carbon dioxide and carboxylic acid. In surface waters, dissolved VOCs will rapidly volatilize into the atmosphere where photooxidation will occur. In soil, BTEX compounds are considered mobile under most subsurface conditions and will readily leach into groundwater. Solubilities for benzene, ethylbenzene, toluene and xylene are relatively high, giving these compounds a

generally high mobility in groundwater. Ethylene glycol and propylene glycol are miscible in aqueous solutions (Clement, 1993).

Toxicity

Epidemiological studies have linked benzene with leukemia, and it is classified as a suspected human carcinogen. Chronic exposure to benzene primarily effects the blood-forming tissues, resulting in increased blood counts, followed by aplastic anemia. Prolonged exposure to chlorobenzenes may cause liver and kidney damage. Ethylbenzene has been shown to be teratogenic in laboratory animals. Toluene is not classified as a carcinogen in humans or animals. Chronic exposures to toluene can result in effects on the liver, kidneys, and central nervous system. No carcinogenic effects have been documented for xylenes; possible teratogenic effects have been observed. Chronic exposure to xylenes can result in effects on the liver, kidneys, and central nervous system. Glycol is low in toxicity, with an LD50 of 1,560 mg/kg for ethylene glycol, and 7,790 mg/kg for propylene glycol (Roy F. Weston, p. 4-8).

Persistence

In surface waters and near-surface soils, VOCs will predominantly volatilize into the atmosphere where they rapidly degrade. In subsurface soils where volatilization does not readily occur, VOCs are much more persistent. VOCs will also leach from soils into groundwater. Once in groundwater, VOCs will not readily volatilize and are relatively persistent. Ethylene glycol and propylene glycol are rapidly metabolized in water, and therefore are not persistent (Clement, 1993).

Bioaccumulation

The potential for bioaccumulation of benzene, xylenes and other VOCs has been found to be low. Toluene has not been found to bioaccumulate (USEPA, December 1979). As mentioned above, ethylene and propylene glycol are rapidly metabolized in water, and have not been found to bioaccumulate.

5.2 Quantity of Substance

The cleanup of the former fuel farm facility resulted in the off-site disposal of 2,936 tons of fuel-contaminated soil, and 1,150 gallons of fuel-contaminated wash water. Quantities of deicing fluid used by USAir were presented in Section 4 of this report. Using the winter season of 1994/1995 as an example, where 28,428 gallons of propylene glycol were used (p. 000023), it is possible that as much as half of the fluid spilled onto the pavement (about 14,000 gallons) and about 35% was dispersed by the wind (approximately 10,000 gallons). Deicing fluid is generally mixed with equal parts of water (Roy F. Weston, p. 2-1), so the actual volume of wastewater released to the environment during the 1994/1995 season was approximately 28,000 gallons spilled onto the apron and about 20,000 gallons dispersed into air. Flow rates of stormwater discharged from the current fuel farm were not provided.

5.3 Levels of Contaminants

Groundwater data from the current fuel farm were provided, and pollutants monitored were below method detection limits. Groundwater data were not provided for the former fuel farm area. For the period of July 1991 to July 1994, total benzene, toluene, and xylene (BTX) levels in stormwater from the current fuel farm discharged to Beartrap Creek ranged from less than 2 µg/L to 760 µg/L, while the SPDES limit for total BTX is 100 µg/L. Eight of the 22

BTX measurements were greater than the SPDES limitation. Ethylbenzene concentrations in stormwater ranged from less than 0.5 μg/L to 17 μg/L. Oil and grease concentrations ranged from less than 1 mg/L to 37 mg/L for the same period, with two exceedances of the SPDES limitation of 15 mg/L. Analytical data for releases of deicing fluid are not available.

5.4 Impacts on Special Areas

According to the Syracuse West National Wetlands Inventory Map (USDOI, 1978), the current USAir fuel farm facility is approximately 2,000 feet south-southeast of three federal wetlands: two are designated as PFO1E and one is designated as PFO1A (palustrine, forested). These wetlands are also New York State freshwater wetlands, designated as SYW5. These areas are upstream of the site and are on the opposite side of Interstate 81, and are not likely to have been impacted by contaminants generated by USAir. Ley Creek North Branch is a Class C waterbody while Beartrap Creek is a Class C waterbody with C(T) standards (6 NYCRR Part 895). As per 6 NYCRR Part 608 (Use and Protection of Waters), protected streams are those streams with the following classifications or standards: AA, AA(T), A, A(T), B, B(T), or C(T). Thus, Beartrap Creek is considered a "protected stream." Elevated levels of BTX compounds and oil and grease in stormwater from the USAir fuel farm area have been discharged to this protected stream. As of August 1996, there were no New York State "Natural Heritage Sensitive Elements" known near the site (i.e., within one mile).

6.0 SUMMARY OF CONCERNS

Based on the data and information provided by USAir Group, Inc., the following concerns are identified:

- Waste disposal information, effluent monitoring data, and groundwater monitoring data from the current USAir fuel farm were only provided dating back to 1990. USAir, however, has operated since 1989 at Hancock Airport, and prior to 1989, operated under the names of Piedmont, Mohawk, and Allegheny;

- Underground storage tanks, contaminated soil and contaminated water were removed from the former USAir/American Airlines fuel farm area at Hancock Airport. Groundwater analytical data, if collected from this area, were not provided;

- Based on the review of USAir's effluent monitoring data (1991 to 1994) from the oil/water separator which treats stormwater from the fuel farm, there have been several exceedances of SPDES effluent limitations for total BTX and oil and grease. However, NYSDEC Notices of Violation were not included, nor was any information regarding corrective actions taken to reduce levels of BTX compounds in stormwater. This contaminated stormwater was discharged to Beartrap Creek, which is a tributary of Ley Creek; and

- As with most airports, ethylene glycol and propylene glycol deicing fluids have been released to nearby surface waters. Glycol contamination of Ley Creek North Branch and Beartrap Creek, both of which are tributaries of Onondaga Lake, is likely to have occurred as a result of USAir deicing activities. Glycol contamination reduces dissolved oxygen content of surface waters (Clement, 1993). In order to assess the

impacts of glycol discharges from Hancock Airport to the Onondaga Lake system, dissolved oxygen data from Ley Creek North Branch and Beartrap Creek measured in winter months would be required. Such data, if collected, were not provided by USAir. Also, dissolved oxygen data from these two tributaries are not available in the Onondaga Lake Project Database, which includes data from Onondaga County and USGS, among others.

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USAir Group, Inc. Mailing No. 2: Supplemental Response to Request for Information. March 6, 1996.

Site Location: USAir Group, Inc.

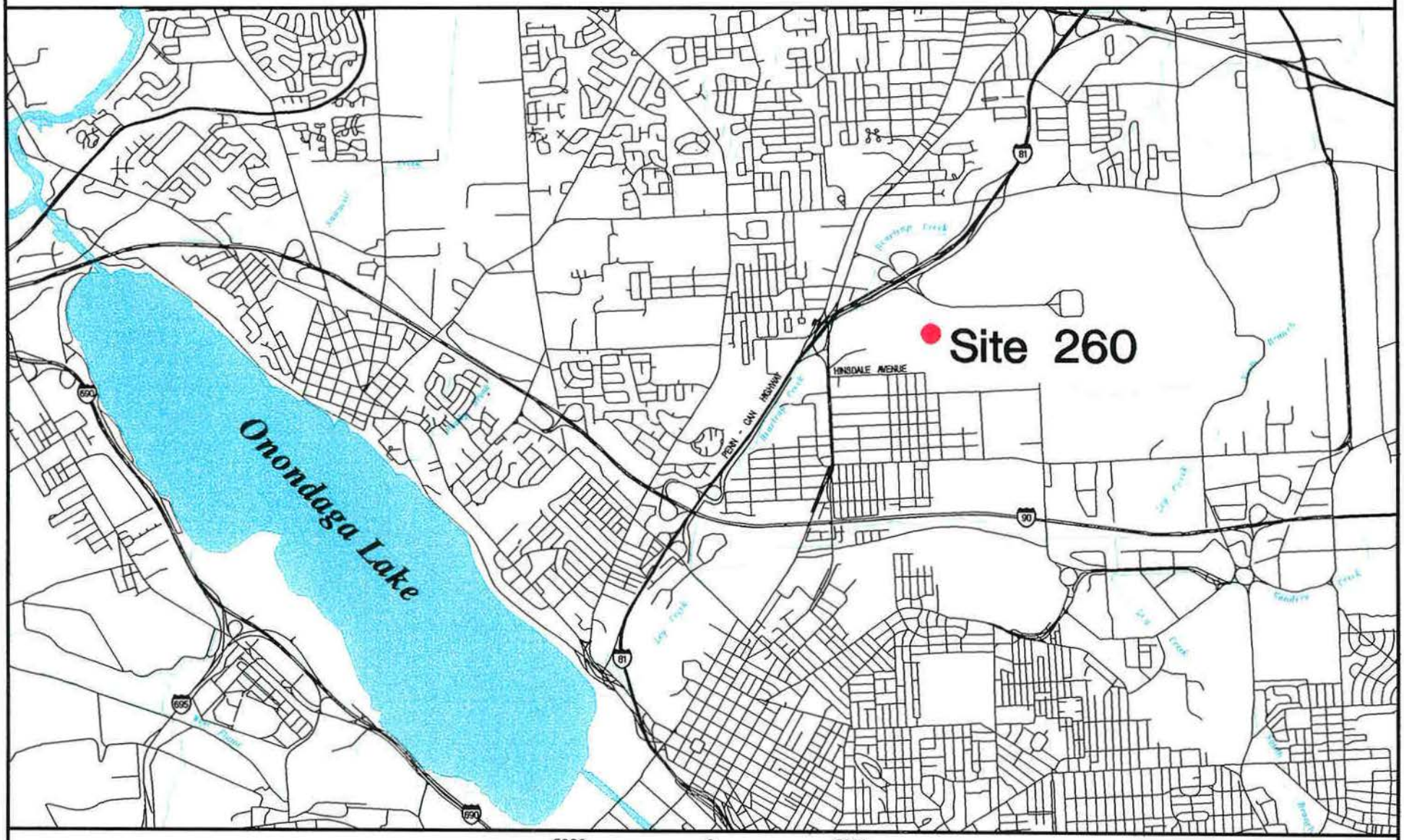
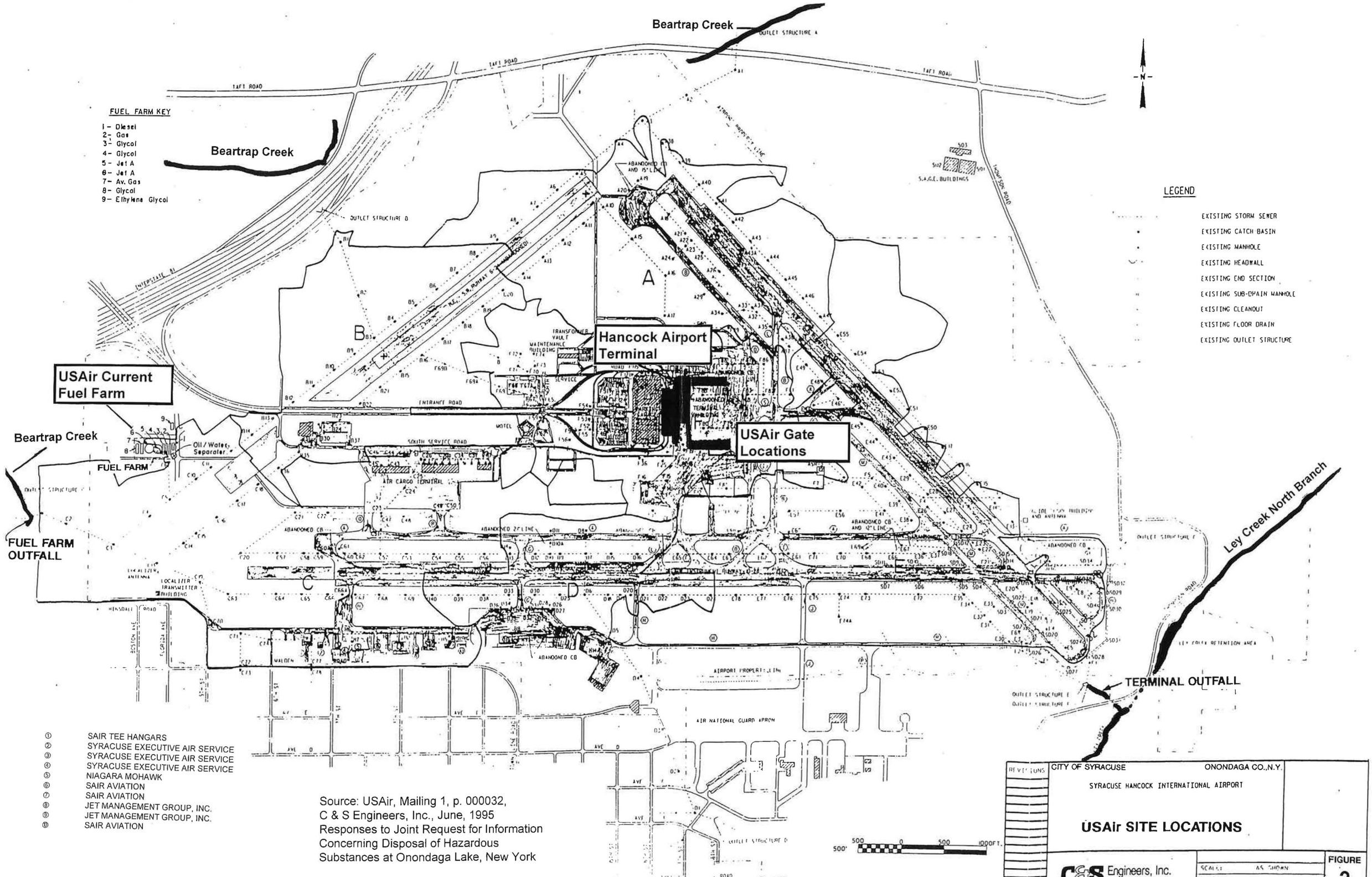


Figure 1



① SAIR TEE HANGARS
② SYRACUSE EXECUTIVE AIR SERVICE
③ SYRACUSE EXECUTIVE AIR SERVICE
④ SYRACUSE EXECUTIVE AIR SERVICE
⑤ NIAGARA MOHAWK
⑥ SAIR AVIATION
⑦ SAIR AVIATION
⑧ JET MANAGEMENT GROUP, INC.
⑨ JET MANAGEMENT GROUP, INC.
⑩ SAIR AVIATION

Source: USAir, Mailing 1, p. 000032,
C & S Engineers, Inc., June, 1995
Responses to Joint Request for Information
Concerning Disposal of Hazardous
Substances at Onondaga Lake, New York

REVISIONS

CITY OF SYRACUSE ONONDAGA CO., N.Y.

SYRACUSE HANCOCK INTERNATIONAL AIRPORT

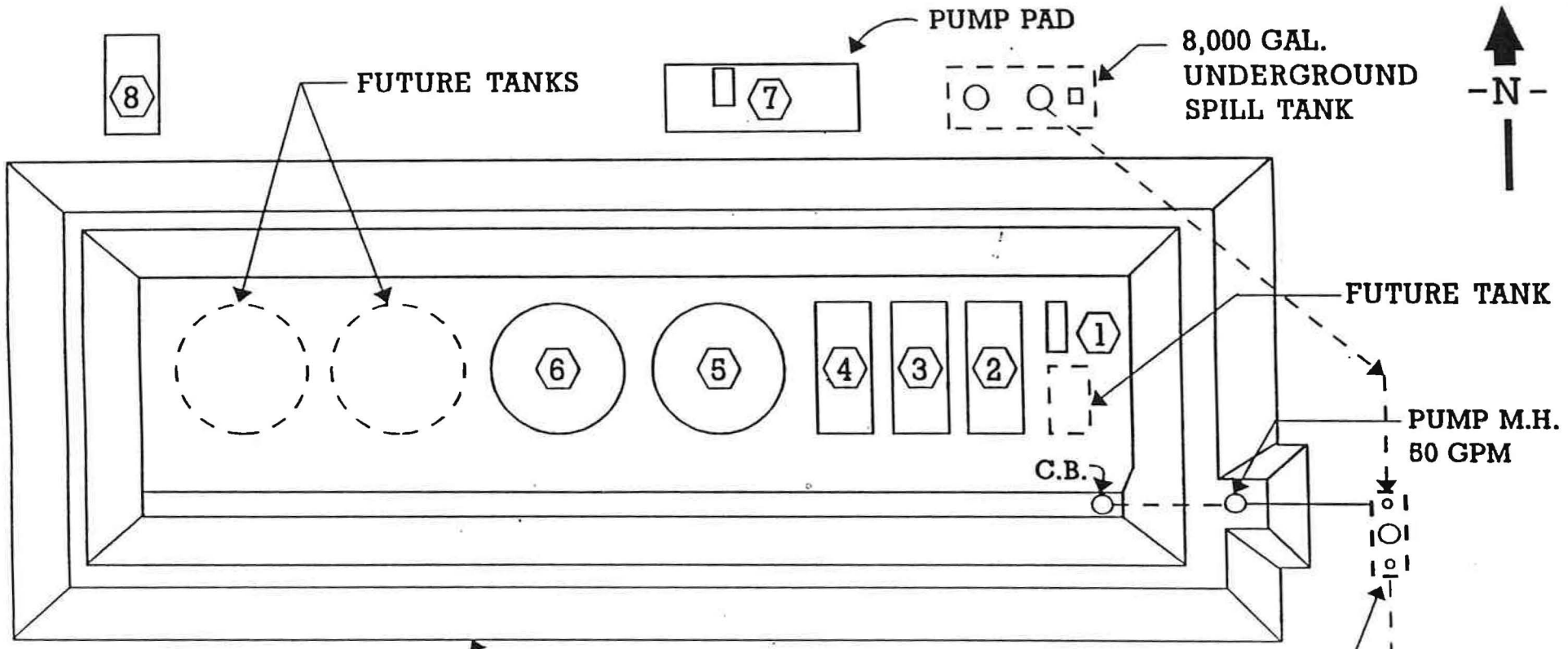
USAir SITE LOCATIONS

C&S Engineers, Inc.

SCALE: AS SHOWN

FILE NO.

FIGURE 2



LEGEND

1. TANK DIESEL FUEL
2. UNLEADED GASOLINE
3. GLYCOL FLUID
4. GLYCOL FLUID
5. JET-A FUEL
6. JET-A FUEL
7. SLOP TANK
8. TYPE 2 ANTI-ICING FLUID

TANK LAYOUT

N.T.S.

Source: USAir, Mailing 1, p. 000077
C & S Engineers, Inc., June 1994
Spill Prevention Control and Countermeasure Plan
for USAir Fuel Facility

U.S.AIR FUEL FARM
SPCC PLAN
SYRACUSE HANCOCK
INTERNATIONAL AIRPORT

C&S Engineers, Inc.

FIGURE 3